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INFORMATION SYSTEMFIELD OF THE INVENTION

5 [0001] The present invention relates, in general, to an information system for vehicles which comprises a means for storing information data relating to operational parameters of the vehicle, so that said data may be recovered after a road accident both from inside the vehicle compartment and from the outside thereof.

10 [0002] More specifically, the present invention relates to a device which is designed to store information relating to operational parameters of the vehicle and, furthermore, allows use of the vehicle's equipment without removing one's hands from the steering wheel and without diverting one's visual attention from the road along which the motor vehicle is travelling.

STATE OF THE ART

20 [0003] At present, some motor vehicles have installed inside them devices which store information data relating to operational parameters of the vehicle, such as average speed, average consumption, or the like, said devices being known as on-board computers.

25 [0004] An observer situated inside the vehicle recovers said information data for viewing by means of a display screen installed on the dashboard in a suitable location so that, for example, the driver of the vehicle may view the desired information data.

30 [0005] The driver is required to divert, momentarily, his/her visual attention from the road as well as remove one hand from the steering wheel in order to select the data which is to be recovered. The selection is introduced manually by means of a data input device such as a keyboard.

35 [0006] As a consequence, for a few moments, the driver does not have all his/her attention - both visual and manual - focused on the vehicle and on the road along which he/she is travelling. Therefore, in the event of a sudden change in the traffic conditions, the driver's

reaction becomes slower and, therefore, it takes the driver a few critical instants to recover control of the vehicle and his/her visual attention on the road, with the result that the driver might be unable to avoid a road accident.

[0007] In the case where a road accident has occurred, an observer appointed to clarify the circumstances surrounding said accident is able to rely solely on information which is circumstantial and imprecise in some cases, in order to determine the real events which gave rise to said accident.

[0008] Therefore, there is a need to propose a device which allows the storage and recovery of stored data relating to the traffic conditions and operational conditions of a vehicle which may be involved in a road accident such as a collision.

#### **SUMMARY OF THE INVENTION**

[0009] One object of the present invention is an information system which comprises a means for storing information data relating to operational parameters of a motor vehicle, such that the data storage means is protected externally by means of a combination of materials which have the function of providing mechanical, electrical and fireproof protection.

[0010] Another object of the invention is that the means for storing information data should store data relating to operational parameters of the motor vehicle such as speed, acceleration, deceleration, initial instant of braking and duration thereof, direction of steering of the vehicle, external environmental conditions, A.B.S. (antilock braking system), T.C. (traction control), D.C. (descent control), S.R.S. (antiskid control), control of the mechanical power and equipment of the vehicle which is used in a given instant, or the like.

[0011] Another object of the invention is to provide a device which allows an observer situated inside the

vehicle, such as the driver of the said vehicle, to operate the various apparatus installed inside the vehicle without diverting his/her attention from the road and without removing his/her hands from the steering wheel.

5 [0012] Yet another object of the present invention is to be able to display, opposite the driver, instantaneous parameters relating to operation of the vehicle and also those apparatus which are installed  
10 inside the vehicle compartment and are in operation, all this taking place without one's attention being distracted from the traffic. Therefore, the risk of an accident due to operation of the electronic device installed inside the vehicle compartment is reduced.

15 [0013] Yet another object of the invention is to avoid the driver having to take his/her hands off the steering wheel and divert his/her visual attention from the road while operating an electronic device.

[0014] Yet another object of the invention is to  
20 display information data selected by means of a display screen with a low energy consumption, such as a liquid crystal display (LCD), electroluminescence, plasma screen, or the like.

[0015] Yet another object of the invention is to employ  
25 a data input means which is located close to the driver and which is easy to use with the aim of facilitating the task of selecting the various operating modes, menus, etc. Moreover, the data input means is preferably connected to the remainder of the system  
30 without wires, preferably using electromagnetic signals such as infrared rays.

[0016] Yet another object of the present invention is that an observer outside the vehicle may be able to recover operational parameters of the vehicle after an  
35 accident in order to determine the events which occurred before and during the accident.

[0017] With this storage means, an observer, for

example a public official or a representative of an insurance company is able to know all the circumstances which surrounded an accident.

[0018] Another object of the invention is to develop a system which is simple and of low cost.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

[0019] A more detailed explanation of the invention is provided in the following description based on the accompanying figure in which:

10 - Figure 1 shows an information system according to the invention in the form of a block diagram.

#### **DESCRIPTION OF THE INVENTION**

[0020] Figure 1 shows an information system of the present invention which comprises a means 14 for storing data or on-board computer which is connected to a plurality of means 18 for detecting data or sensors distributed in different parts of the engine. Also, the computer 14 is connected to each one of the devices 16 with which the vehicle is equipped such as a car radio, a CD player, a satellite positioning system such as GPS, or the like. Likewise, it is also connected to a telecommunications apparatus 17 which is able to communicate with a monitoring and control centre via a radio communications system which uses a communications protocol such as the short messages protocol SMS. A first data input/output device 12 which has manual elements such as keys linked to control of a cursor is provided. For visual display of selected data a screen, not shown, is provided, by means of which and, in a selective manner, it is possible to show visually the selected data relating to each of the apparatus 16 connected to the computer 14.

[0021] The computer 14 stores information data relating to operational parameters of different parts of the engine, such as consumption, pressures, temperatures, liquid levels, engine revolutions, vehicle speed, braking time, or the like, which it receives from each

of the sensors 18.

[0022] The driver selects both operational data of the vehicle and an apparatus 16 from among those installed in the vehicle by means of an input on the first  
5 keyboard 12 installed on the steering wheel 11 or else by means of control of the cursor within the menu field displayed on the screen, so that he/she does not take his/her hands off the steering wheel and is always able to react rapidly to the changing traffic conditions.

10 [0023] The computer 14 is housed inside a housing such as a reinforced casing 19 suitable for withstanding impacts of a high intensity, high temperatures, or the like. The casing 19 may be made from a material such as stainless steel which comprises a heat and fireproof  
15 insulator. The computer 14 receives electric power from a battery of the vehicle and an auxiliary battery which supplies said power in the event of failure of the vehicle's battery. In this way, the supply of electric power to the computer 14 is ensured so that  
20 the computer is able to store data and perform certain operations autonomously in the event of an accident.

[0024] Once the vehicle is started up, the different sensors 18 start to detect data in real time and as the data is obtained it is sent to the computer 14 to be  
25 recorded and stored, so that it may be recovered for consultation both by an observer situated inside the compartment of the vehicle which may be in movement, and by an observer who is situated outside the vehicle when it is stationary.

30 [0025] As a result, both observers are able to use different means in order to consult the data stored inside the computer 14. For example, the observer who consults the information data from outside the vehicle uses a second data input/output device 15 which is  
35 connected to an output port 20 of the computer 14.

[0026] The second data input device 15 includes an alphanumeric keyboard for inputting/outputting data in

order to select the fields of the menu relating to the data which is to be recovered from the computer 14. The selected information data is displayed on a display monitor, not shown, connected to the alphanumeric  
5 keyboard. To summarize, once the vehicle is stationary, the observer outside the vehicle may extract information from the vehicle corresponding to operational parameters of the vehicle and to apparatus  
16 which are installed inside the vehicle and which may  
10 be operated by the driver. The recovered information may help clarify the circumstances of an accident.

[0027] Likewise, while the driver is driving the vehicle, he/she may display on the screen information data relating to operational parameters and monitor  
15 operation of the apparatus installed inside it.

[0028] The driver may display the desired information data by means of a display unit such as a holographic projector which projects the desired information data onto the front windscreen. In this way the driver does  
20 not divert his/her visual attention from the road along which he/she is travelling.

[0029] The first data input device 12 includes an emission means which emits a selection performed by the driver by means of a first keyboard to a reception  
25 means 13 installed on the vehicle dashboard via electromagnetic signals such as infrared rays.

[0030] Once the signals have been received by the receiving device 13, these signals are supplied to the computer 14 in order to recover the desired data and  
30 show it to the driver by means of the holographic display device.

[0031] Operationally speaking, the first data input device 12 includes a set of control elements such as keys or pushbuttons, of the membrane type,  
35 corresponding to numeric and alphanumeric characters and having functions such as vertical displacement upwards and downwards, displacement of menus or the

like. Likewise, some keys may be associated with various characters and/or functions.

[0032] Another option, so that the driver may select the data which he/she wishes to display, is to install  
5 a touch screen so that by pressing on a predetermined zone of said screen the information data which the driver wishes to display or the apparatus which he/she wishes to operate are selected.

[0033] In both cases, both the first data input device  
10 12 and the second data input device 15 allow changing-over manually from displayed information to other information which one wishes to display, in a rapid and easy manner. It must be pointed out that, in the case of the driver, he/she does not divert his/her visual  
15 attention from the road and does not take his/her hands off the steering wheel 11 while he/she selects and displays the desired information data and controls operation of the different apparatus installed in the vehicle.

[0034] The first data input device 12 has a mode of operation which requires little attention from the driver and may be operated with one finger of the hand, for example, the thumb. When a key is operated, it generates the corresponding electromagnetic control  
25 signal, namely an infrared signal which is transmitted from the emitter to the receiving device 13 connected to the on-board computer.

[0035] The systems for controlling the equipment 16 will be those which are usually activated during  
30 driving and require, for operation thereof, the use of one hand, removing the latter from the steering wheel 11 and diverting one's visual attention from the road for a few moments.

[0036] The signal received by the receiving device 13  
35 is converted into the corresponding electric control signal so as to be supplied to the computer 14 so that, on the basis of the information received, it will

generate the corresponding control signal for a device 16 such as a musical apparatus, window operating system or the like, or will recover the desired information data for displaying thereof.

5 [0037] After a collision, the external observer may recover information data stored in the computer 14 by means of the second input device 15.

[0038] Likewise, after an accident, the computer 14 is capable of sending an emergency message to the  
10 monitoring centre via the telecommunication unit 17 by emitting a message in accordance with the SMS protocol. Once said message has been received at the monitoring centre, the emergency services will be informed so that they can provide assistance for the occupants of the  
15 vehicle.

[0039] The message which is sent from the vehicle which has suffered the accident includes information relating to the position of the vehicle supplied by the satellite tracking system such as a GPS system,  
20 connected to the computer 14.

[0040] It is important to point out the great advantage of that described above since, even in the case where no occupant of the vehicle is able to request assistance, the vehicle has means which perform said  
25 task independently.

[0041] Obviously, the vehicle comprises impact sensors, not shown, connected to the computer 14 so that, once a signal corresponding to an accident is received, the computer 14 is able to generate the corresponding  
30 sequence of control signals after the same has sent, for example, the emergency message to the monitoring centre.